

# USING *SureStep*™ WITH AUTOMATIONDIRECT PLCs

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## Compatible *Direct*LOGIC PLCs and Modules

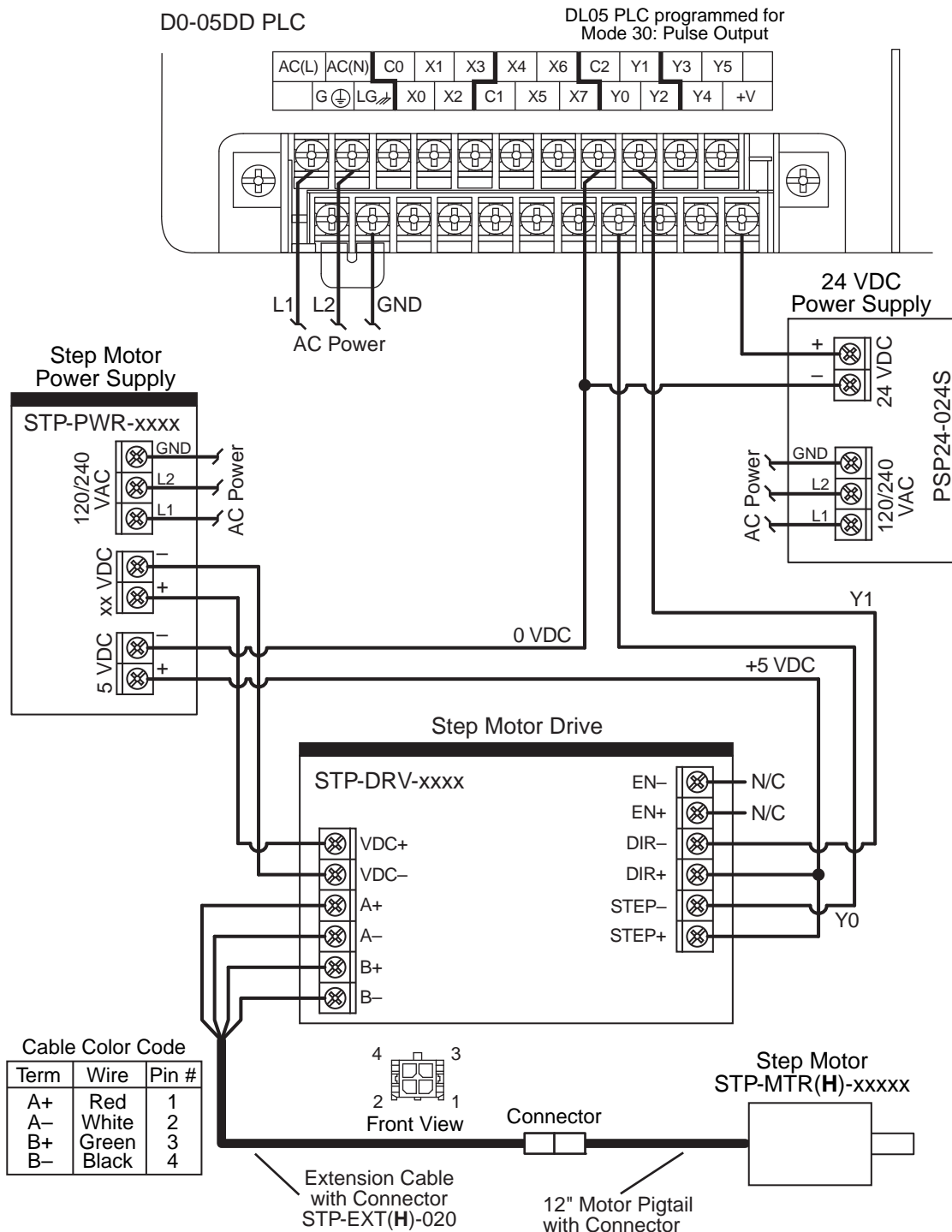
The following tables show which high-speed pulse-output *Direct*LOGIC PLCs and modules can be used with the SureStep Microstepping Motor Drives.

<i>Direct</i> LOGIC PLCs/Modules for Use with SureStep Drive (1)	
<b>DL05 PLCs</b>	
<b>D0-05AD</b>	DL05 CPU, 8 AC in / 6 DC out, 110/220 VAC power supply. <u>Inputs:</u> 8 AC inputs, 90-120 VAC, 2 isolated commons. <u>Outputs:</u> 6 DC outputs, 6-27 VDC current sinking, 1.0 A/pt max, 1 common. Two outputs are configurable for independent CW/CCW pulse train output or step and direction pulse output up to 7kHz (0.5 A/pt.).
<b>D0-05DD</b>	DL05 CPU, 8 DC in / 6 DC out, 110/220 VAC power supply. <u>Inputs:</u> 8 DC inputs, 12-24 VDC current sinking/sourcing, 2 isolated commons. <u>Outputs:</u> 6 DC outputs, 6-27 VDC current sinking, 1.0 A/pt max, 1 common. Two outputs are configurable for independent CW/CCW pulse train output or step and direction pulse output up to 7kHz (0.5 A/pt) (not available when using high-speed inputs).
<b>D0-05DD-D</b>	DL05 CPU, 8 DC in / 6 DC out, 12/24 VDC power supply. <u>Inputs:</u> 8 DC inputs, 12-24 VDC current sinking/sourcing, 2 isolated commons. <u>Outputs:</u> 6 DC outputs, 6-27 VDC current sinking, 1.0 A/pt max, 1 common. Two outputs are configurable for independent CW/CCW pulse train output or step and direction pulse output up to 7kHz (0.5 A/pt.) (not available when using high-speed inputs).
<b>DL06 PLCs</b>	
<b>D0-06DD1</b>	DL06 CPU, 20 DC in / 16 DC out, 110/220 VAC power supply, with 0.3A 24 VDC auxiliary device power supply. <u>Inputs:</u> 20 DC inputs, 12-24 VDC current sinking/sourcing, 5 isolated commons (4 inputs per common). <u>Outputs:</u> 16 DC outputs, 12-24 VDC current sinking, 1.0A/pt max, 4 commons non-isolated (4 points per common). Two outputs are configurable for independent CW/CCW pulse train output or step and direction pulse output up to 10 kHz (0.5 A/pt) (not available when using high-speed inputs).
<b>D0-06DD2</b>	DL06 CPU, 20 DC in / 16 DC out, 110/220 VAC power supply, with 0.3A 24 VDC auxiliary device power supply. <u>Inputs:</u> 20 DC inputs, 12-24 VDC current sinking/sourcing, 5 isolated commons (4 inputs per common). <u>Outputs:</u> 16 DC outputs, 12-24 VDC current sourcing 1.0A/pt max, 4 commons non-isolated (4 points per common). Two outputs are configurable for independent CW/CCW pulse train output or step and direction pulse output up to 10 kHz (0.5 A/pt) (not available when using high-speed inputs).
<b>D0-06DD1-D</b>	DL06 CPU, 20 DC in / 16 DC out, 12/24 VDC power supply. <u>Inputs:</u> 20 DC inputs, 12-24 VDC current sinking/sourcing, 5 isolated commons (4 inputs per common). <u>Outputs:</u> 16 DC outputs, 12-24 VDC current sinking, 1.0 A/pt max, 4 commons non-isolated (4 pts/common). Two outputs are configurable for independent CW/CCW pulse train output or step and direction pulse output up to 10 kHz (0.5 A/pt) (not available when using high-speed inputs).
<b>D0-06DD2-D</b>	DL06 CPU, 20 DC in / 16 DC out, 12/24 VDC power supply. <u>Inputs:</u> 20 DC inputs, 12-24 VDC current sinking/sourcing, 5 isolated commons (4 inputs per common). <u>Outputs:</u> 16 DC outputs, 12-24VDC current sourcing, 1.0A/pt max, 4 commons non-isolated (4 pts/common). Two outputs are configurable for independent CW/CCW pulse train output or step and direction pulse output up to 10 kHz (0.5 A/pt) (not available when using high-speed inputs).
<b>DL05/DL06 High Speed Counter I/O Module</b>	
<b>H0-CTRIO</b>	DL05/06 High Speed Counter I/O Interface Module, 4 DC sink/source inputs 9-30 VDC, 2 isolated sink/source DC outputs, 5-30 VDC, 1A per point. <u>Inputs supported:</u> 1 quadrature encoder counters up to 100 kHz, or 2 single channel counters up to 100 kHz, and 2 high speed discrete inputs for Reset, Inhibit, or Capture. <u>Outputs supported:</u> 2 independently configurable high speed discrete outputs or 1 channel pulse output control, 20Hz-25kHz per channel, pulse and direction or CW/CCW pulses.
<i>Table continued next page.</i>	

<i>DirectLOGIC PLCs/Modules for Use with SureStep Drive <sup>(1)</sup> (continued)</i>	
<b>DL105 PLCs</b>	
<b>F1-130AD</b>	DL130 CPU, 10 AC in / 8 DC out, 110/220 VAC power supply. <u>Inputs:</u> 10 AC inputs, 80-132 VAC, 3 isolated commons. <u>Outputs:</u> 8 DC outputs, 5-30 VDC current sinking, 0.5A/pt max, 3 internally connected commons. Two outputs are configurable for independent CW/CCW pulse train output or step and direction pulse output up to 7kHz (@ 0.25 A/pt max).
<b>F1-130DD</b>	DL130 CPU, 10 DC in / 8 DC out, 110/220 VAC power supply. <u>Inputs:</u> 10 DC inputs, 12-24 VDC current sinking/sourcing, 3 isolated commons. <u>Outputs:</u> 8 DC outputs, 5-30 VDC current sinking, 0.5 A/pt max, 3 internally connected commons. Two outputs are configurable for independent CW/CCW pulse train output or step and direction pulse output up to 7kHz (@ 0.25 A/pt max) (not available when using high-speed inputs).
<b>F1-130DD-D</b>	DL130 CPU, 10 DC in / 8 DC out, 12/24 VDC power supply. <u>Inputs:</u> 10 DC inputs, 12-24 VDC current sinking/sourcing, 3 isolated commons. <u>Outputs:</u> 8 DC outputs, 5-30 VDC current sinking, 0.5 A/pt max, 3 internally connected commons. Two outputs are configurable for independent CW/CCW pulse train output or step and direction pulse output up to 7kHz (@ 0.25 A/pt max) (not available when using high-speed inputs).
<b>DL205 High Speed Counter I/O Modules</b>	
<b>H2-CTRIO(2)</b>	DL205 High Speed Counter I/O Interface Module, 8 DC sink/source inputs 9-30 VDC, 4 isolated sink/source DC outputs, 5-30 VDC, 1A per point. <u>Inputs supported:</u> 2 quadrature encoder counters up to 100 kHz, or 4 single channel counters up to 100 kHz, and 4 high speed discrete inputs for Reset, Inhibit, or Capture. <u>Outputs supported:</u> 4 independently configurable high speed discrete outputs or 2 channels pulse output control, 20 Hz - 25 kHz per channel, pulse and direction or CW/CCW pulses.
<b>D2-CTRINT</b>	Counter Interface Module, 4 isolated DC inputs, 1 pulse train output (CW) or 2 pulse train outputs (CW/CCW) with DC input restrictions, accepts two up-counters when used with D2-240 or D2-250(-1) (one only with D2-230), or one up/down counter. (not available when using high-speed inputs).
<b>Terminator I/O High Speed Counter I/O Module</b>	
<b>T1H-CTRIO(2)</b>	Terminator I/O High Speed Counter I/O Interface Module, 8 DC sink/source inputs 9-30 VDC, 4 isolated sink/source DC outputs, 5-30 VDC, 1A per point. <u>Inputs supported:</u> 2 quadrature encoder counters up to 100 kHz, or 4 single channel counters up to 100 kHz, and 4 high speed discrete inputs for Reset, Inhibit, or Capture. <u>Outputs supported:</u> 4 independently configurable high speed discrete outputs or 2 channels pulse output control, 20 Hz - 25 kHz per channel, pulse and direction or CW/CCW pulses. (Use with T1K-16B or T1K-16B-1 terminal base.)
<b>DL405 High Speed Counter I/O Module</b>	
<b>H4-CTRIO</b>	DL405 High Speed Counter I/O Interface Module, 8 DC sink/source inputs 9-30 VDC, 4 isolated sink/source DC outputs, 5-30 VDC, 1A per point. <u>Inputs supported:</u> 2 quadrature encoder counters up to 100 kHz, or 4 single channel counters up to 100 kHz, and 4 high speed discrete inputs for Reset, Inhibit, or Capture. <u>Outputs supported:</u> 4 independently configurable high speed discrete outputs or 2 channels pulse output control, 20 Hz - 25 kHz per channel, pulse and direction or CW/CCW pulses.
<p><b>(1) Any DirectLOGIC PLC capable of RS-232 ASCII communication can write serial commands to the SureStep Advanced Microstepping Drives (STP-DRV-4850 &amp; -80100). These PLCs include DL 05, 06, 250-1, 260, 350, and 450. However, we strongly recommend using DL06 or DL260 PLCs for serial commands due to their more advanced ASCII instruction set which includes PRINTV and VPRINT commands.</b></p> <p><b>(2) The H2-CTRIO and T1H-CTRIO High Speed Counter I/O Interface Modules can also be used to control the SureStep Stepping System in PC-Based Control systems with Think &amp; Do/Studio, or with our embedded WinPLC/EBC module plugged into the CPU slot of the DL205 base.</b></p>	

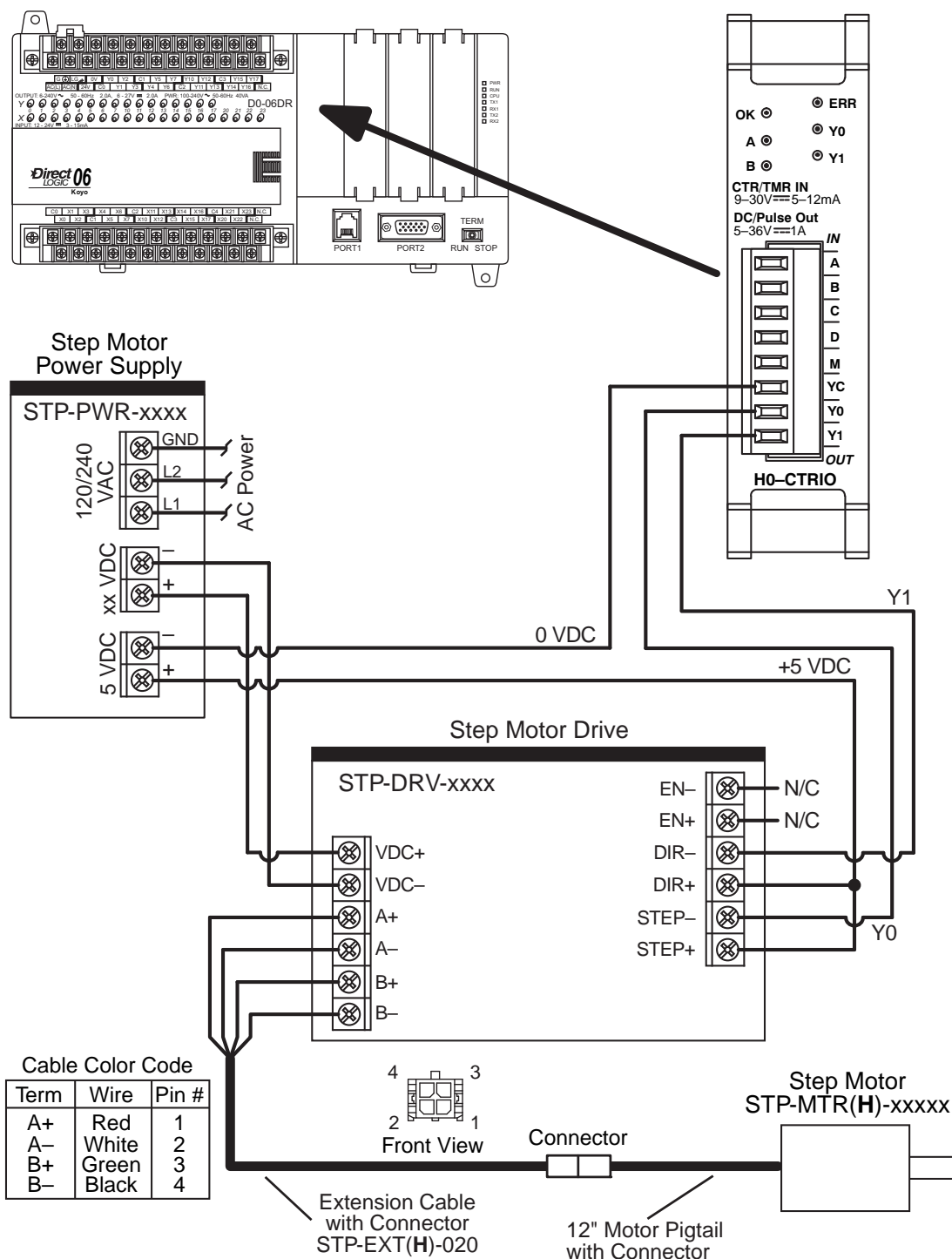
## Typical Connections to a DL05 PLC

The following wiring diagram shows typical connections between the *SureStep* Stepping System components and a *Direct*LOGIC DL05 PLC. Refer to the DL05 Micro PLC User Manual, p/n D0-USER-M, High-Speed Input and Pulse Output Features chapter, for detailed programming instructions when using the PLC for the Mode 30: Pulse Output function.



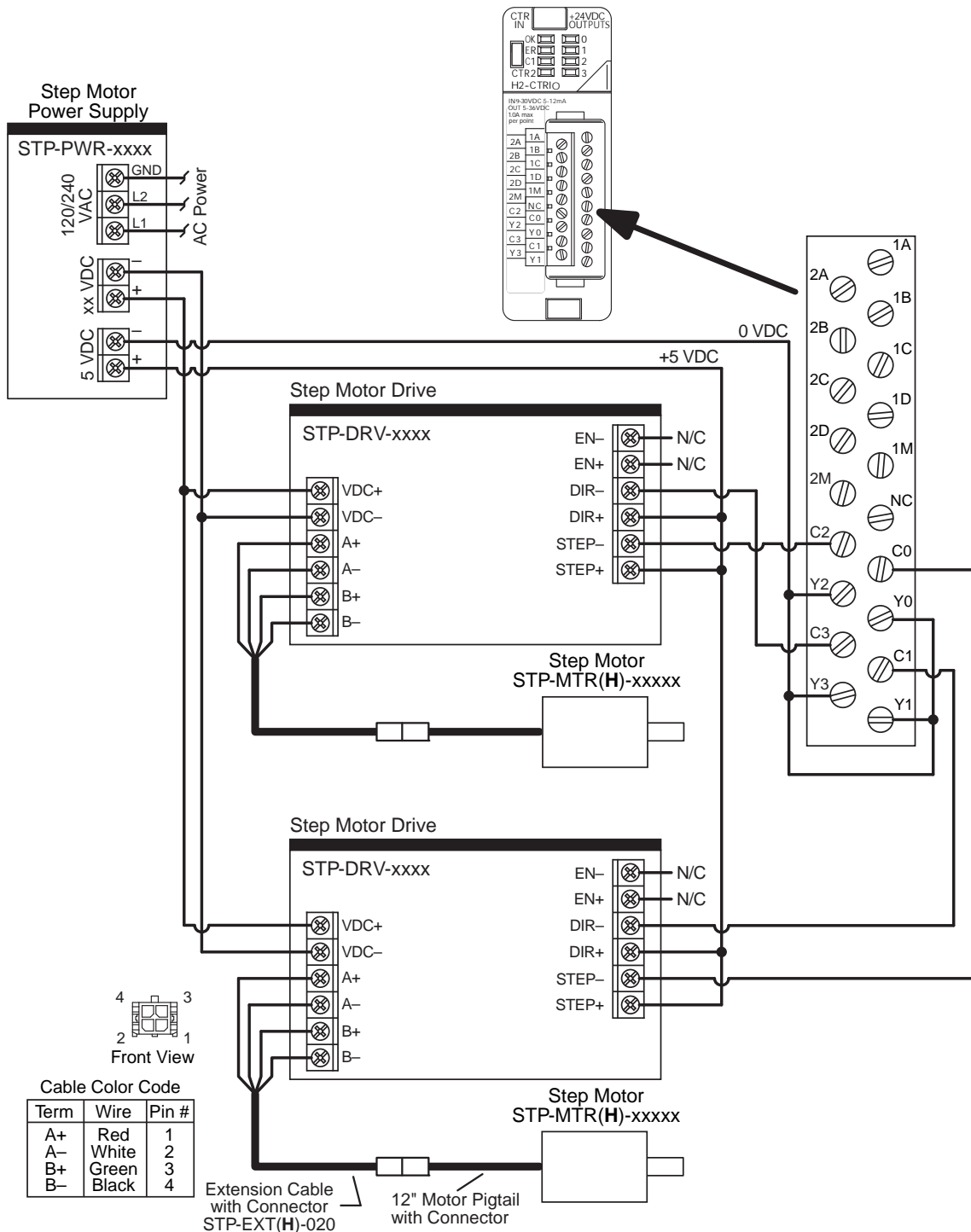
## Typical Connections to an H0-CTRIO

The following wiring diagram shows typical connections between the *SureStep* Stepping System components and a *Direct*LOGIC H0-CTRIO High Speed Counter I/O Interface Module installed in either a DL05 or DL06 PLC option slot. Refer to the CTRIO High-Speed Counter Module User Manual, p/n Hx-CTRIO-M, for detailed programming instructions when using the H0-CTRIO module.



## Typical Connections – Multiple Drives/Motors

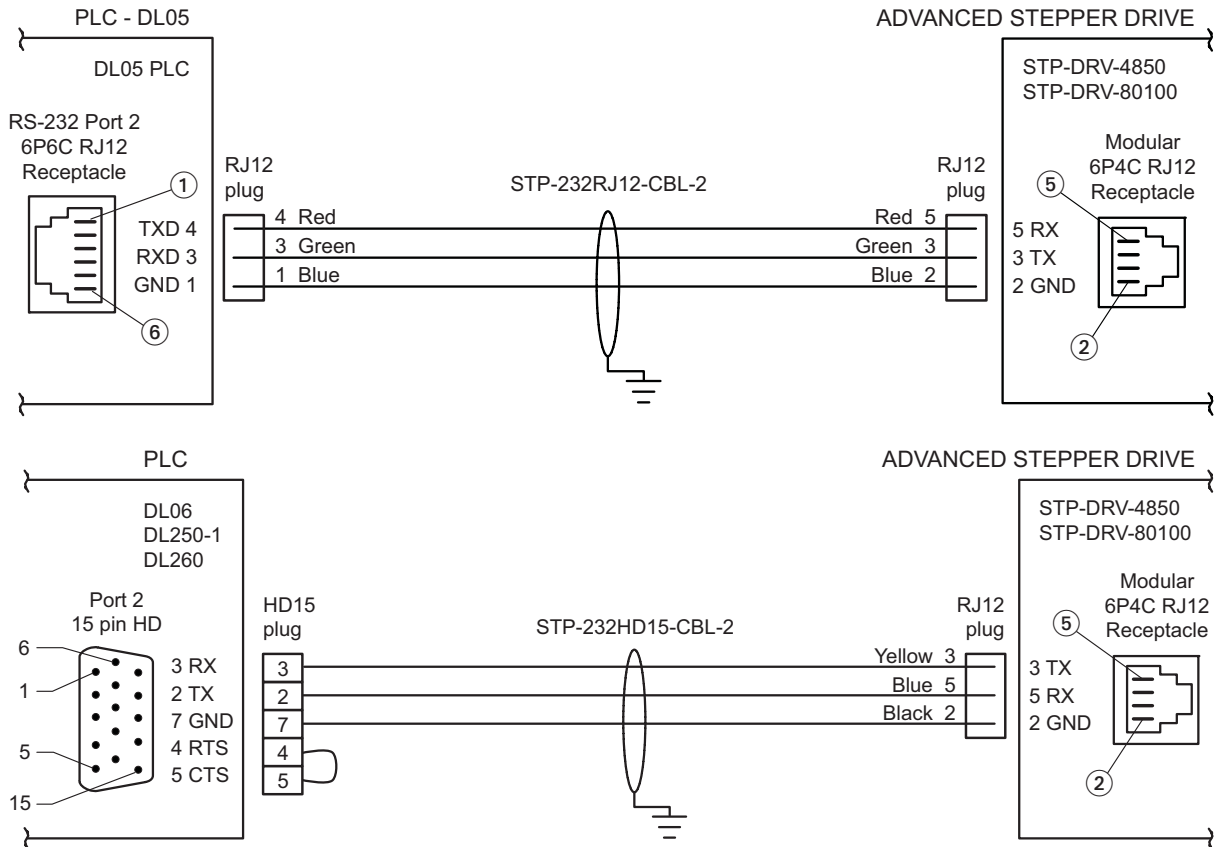
The following wiring diagram shows typical connections between the *SureStep* Stepping System components and a *DirectLOGIC* H2-CTRIO High Speed Counter I/O Interface Module installed in a DL205 PLC. Refer to the CTRIO High-Speed Counter Module User Manual, p/n Hx-CTRIO-M, for detailed programming instructions when using the H2-CTRIO module.



# Typical *Direct*LOGIC PLC Serial Connections to an Advanced *SureStep* Drive

The following wiring diagrams show typical serial connections between a *SureStep* Advanced Microstepping Drive and a *Direct*LOGIC PLC capable of RS-232 ASCII communication. Refer to the particular PLC user manual for instructions for writing ASCII serial commands.

## Serial Connection Using Automation Direct Cables



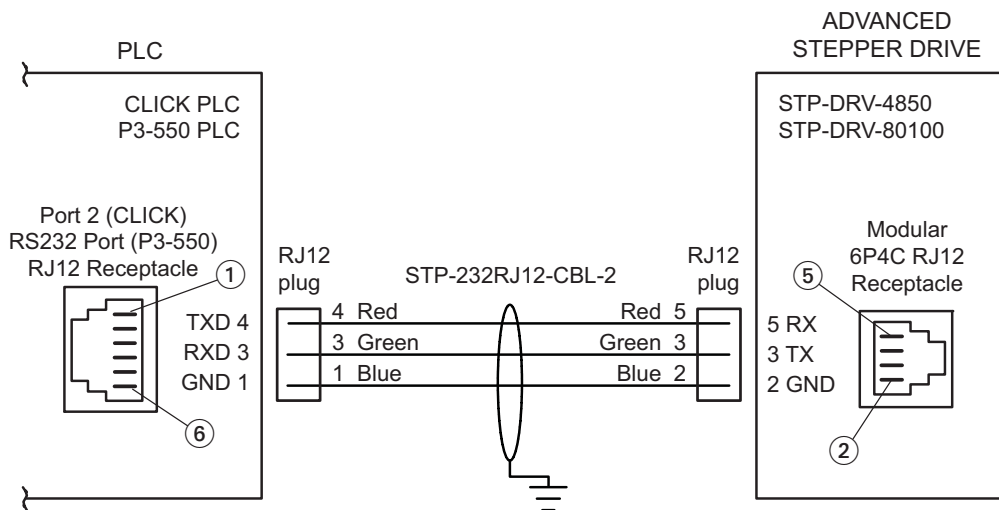
## Serial Connection Using Custom Cables

Use Belden 9841 or equivalent cable, and wire according to the Automation Direct cable diagrams shown above (including RTS/CTS jumper for DL06, DL250-1, and DL260).

## Typical CLICK & P3000 PLC Serial Connections to an Advanced *SureStep* Drive

The following wiring diagrams show typical serial connections between a *SureStep* Advanced Microstepping Drive and a CLICK PLC or a P3-550 PLC capable of RS-232 ASCII communication. Refer to the particular PLC user manual for instructions for writing ASCII serial commands.

### Serial Connection Using Automation Direct Cables



### Serial Connection Using Custom Cables

Use Belden 9841 or equivalent cable, and wire according to the Automation Direct STP-232RJ12-CBL-2 diagram shown above.